What Is Claimed Is:

1. A method of producing a porous medium having a grading porous structure, comprising the steps of:

installing a sample consisting of a powder compact or a porous body in a rotating body; and

heating the sample while applying a centrifugal force to the sample through high-speed rotation of the rotating body to produce a porous medium having a grading porous structure in which the pore size and the porosity change gradually by using the pressure gradient in the sample arising through the centrifugal force.

2. The method of producing a porous medium having a grading porous structure according to claim 1, wherein the sample is constituted from a material selected from the group consisting of ceramics, metals, plastics, and composite materials thereof.

3. The method of producing a porous medium having a grading porous structure according to claim 1, wherein the microstructure comprising the pore size and the porosity is controlled by adjusting the pressure gradient in the sample arising through the centrifugal force.

4. The method of producing a porous medium having a grading porous structure according to claim 1, wherein the porous medium has a bulk form or a membrane form.

5. The method of producing a porous medium having a grading porous structure according to claim 1, comprising the steps of:

calculating a shrinkage factor, which is defined as the ratio of an amount of shrinkage to an original size, of the sample due to the pressure arising in the material under the centrifugal force;

predicting the pore size and setting the porosity of the sample and producing conditions as process parameters, based on the shrinkage factor; and

designing and producing a porous medium having a grading porous structure having prescribed pore size and porosity, based on the process parameters.

6. The method of producing a porous medium having a grading porous structure according to claim 5, wherein the pore size and the porosity of the sample are predicted based on a linear shrinkage factor calculated through the equation:

linear shrinkage factor = $\Delta l/l_0$ (1)

wherein Δl represents the change in length upon shrinkage, and l_0 represents the original length.

7. The method of producing a porous medium having a grading porous structure according to claim 6, wherein in the case that sintering proceeds under diffusion control with liquid phase sintering of spherical particles, the pore size and the porosity of the sample are predicted based on a shrinkage factor $S(\zeta_i)$, which

is a function of location, calculated through the equation:

$$s = \left[\frac{3k_2 \delta D_L C_o V_o}{r_p{}^3 RT} \left(\frac{2\gamma_{LV}}{k_1 r_p} + P \right) \right]^{\frac{1}{3}} \cdot t^{\frac{1}{3}} \qquad (5)$$

wherein k_1 and k_2 represent shape constants, δ represents the thickness of the liquid phase, D_L represents the diffusion coefficient in the liquid phase, C_0 represents the amount of dissolution into the liquid phase, V_0 represents the molar volume of the solute, γ_{LV} represents the liquid phase/vapor phase interface surface energy, r_p represents the initial powder particle size, R represents the gas constant, T represents the absolute temperature, t represents the sintering time, and P represents the centrifugal pressure, which is defined as the pressure arising through the centrifugal force and is a variable of the shape of the sample and the location in the sample.

8. A porous medium having a grading porous structure produced using the method according to any one of claims 1 through 7, wherein the microstructure comprising the pore size and the porosity have been controlled according to the pressure gradient in the sample arising through the centrifugal force.

9. The porous medium having a grading porous structure according to claim 8, wherein the porous medium has a bulk form or a membrane form.

10. A structural component, containing the porous medium having a grading porous structure according to claim 8 or 9 as a constituent element thereof.